

In the claims:

Please cancel claims 1-60 without prejudice or disclaimer of Applicants right to file divisional applications to claim the non-elected subject matter.

Please add claims 61-86 as follows:

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~~61. An isolated nucleic acid molecule comprising a BRCA2 gene wherein the nucleotide sequence of the BRCA2 gene is selected from one or more of the group consisting of:~~

- a) a nucleotide sequence comprising an exon 15 sequence that contains a thymidine at a position corresponding to position 171 of SEQ ID NO: 2;
- b) a nucleotide sequence comprising an exon 15 sequence that contains a thymidine at a position corresponding to position 173 of SEQ ID NO: 2;
- c) a nucleotide sequence comprising an exon 15 nucleotide sequence as set forth in SEQ ID NO: 2; and
- d) a nucleotide sequence comprising an exon 16 nucleotide sequence as set forth in SEQ ID NO: 3.

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- 62. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises by a cytosine at a position corresponding to position 1093 of SEQ ID NO: 4, and wherein the nucleotide at position 1342 is adenine.
 - 63. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a cytosine at a position corresponding to position 1342 of SEQ ID NO: 4.
 - 64. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a guanosine at a position corresponding to position 1593 of SEQ ID NO: 4, and wherein the nucleotide at position 1342 is adenine.

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65. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a cytosine at a position corresponding to position 2457 of SEQ ID NO: 4, and wherein the nucleotide at position 1342 is adenine.
 66. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises an adenine at a position corresponding to position 2908 of SEQ ID NO: 4, and wherein the nucleotide at position 1342 is adenine.
 67. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a guanosine at a position corresponding to position 3199 of SEQ ID NO: 4, and wherein the nucleotide at position 1342 is adenine.
 68. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a guanosine at a position corresponding to position 3624 of SEQ ID NO: 4, and wherein the nucleotide at position 1342 is adenine.
 69. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a cytosine at a position corresponding to position 4035 of SEQ ID NO: 4, and wherein the nucleotide at position 1342 is adenine.
 70. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a guanosine at a position corresponding to position 7470 of SEQ ID NO: 4, and wherein the nucleotide at position 1342 is adenine.
 71. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises an adenine at a position corresponding to position 9079 of SEQ ID NO: 4, and wherein the nucleotide at position 1342 is adenine.
 72. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a sequence that encodes histidine at an amino acid position corresponding to position 289 of SEQ ID NO: 5, and wherein the amino acid at position 372 is asparagine.

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73. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a sequence that encodes histidine at an amino acid position corresponding to position 372 of SEQ ID NO: 5.
74. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a sequence that encodes serine at an amino acid position corresponding to position 455 of SEQ ID NO: 5, and wherein the amino acid at position 372 is asparagine.
75. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a sequence that encodes histidine at an amino acid position corresponding to position 743 of SEQ ID NO: 5, and wherein the amino acid at position 372 is asparagine.
76. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a sequence that encodes isoleucine at an amino acid position corresponding to position 894 of SEQ ID NO: 5, and wherein the amino acid at position 372 is asparagine.
77. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a sequence that encodes aspartate at an amino acid position corresponding to position 991 of SEQ ID NO: 5, and wherein the amino acid at position 372 is asparagine.
78. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a sequence that encodes lysine at an amino acid position corresponding to position 1132 of SEQ ID NO: 5, and wherein the amino acid at position 372 is asparagine.
79. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a sequence that encodes valine at an amino acid position corresponding to position 1269 of SEQ ID NO: 5, and wherein the amino acid at position 372 is asparagine.

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80. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a sequence that encodes serine at an amino acid position corresponding to position 2414 of SEQ ID NO: 5, and wherein the amino acid at position 372 is asparagine.
81. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises a sequence that encodes threonine at an amino acid position corresponding to position 2951 of SEQ ID NO: 5, and wherein the amino acid at position 372 is asparagine.
82. The isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence comprises a nucleotide sequence that encodes a polypeptide set forth in SEQ ID NO: 5, wherein the amino acid at position 372 is asparagine.
83. An isolated nucleic acid molecule according to claim 61, wherein the nucleotide sequence of the BRCA2 gene further comprises one or more of the nucleotide sequences selected from the group consisting of:
- a) the nucleotide sequence as set forth in SEQ ID NO: 6;
 - b) a nucleotide sequence that encodes a polypeptide set forth in SEQ ID NO: 7;
 - c) a nucleotide sequence as set forth in SEQ ID NO: 8;
 - d) a nucleotide sequence that encodes a polypeptide set forth in SEQ ID NO: 9;
 - e) a nucleotide sequence as set forth in SEQ ID NO: 10;
 - f) a nucleotide sequence that encodes a polypeptide as set forth in SEQ ID NO: 11;
 - g) a nucleotide sequence as set forth in SEQ ID NO: 12; and
 - h) a nucleotide sequence that encodes a polypeptide as set forth in SEQ ID NO: 13.
84. An isolated nucleic acid molecule comprising a BRCA2 gene wherein the molecule has a sequence comprising one or more of the group consisting of:
- a) a sequence wherein the nucleotide corresponding to position 1093 of the nucleotide sequence set forth in SEQ ID NO: 4 is not an adenine;
 - b) a sequence wherein the nucleotide corresponding to position 1593 of the nucleotide sequence set forth in SEQ ID NO: 4 is not an adenine;

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- c) a sequence wherein the nucleotide corresponding to position 2908 of the nucleotide sequence set forth in SEQ ID NO: 4 is not a guanosine;
 - d) a sequence wherein the nucleotide corresponding to position 9079 of the nucleotide sequence set forth in SEQ ID NO: 4 is not an guanosine;
 - e) a sequence wherein the nucleotide sequence does not encode asparagine at the amino acid position corresponding to position 289 of the amino acid sequence set forth in SEQ ID NO: 5;
 - f) a sequence wherein the nucleotide sequence encodes histidine at the amino acid position corresponding to position 289 of the amino acid sequence set forth in SEQ ID NO: 5;
 - g) a sequence wherein the nucleotide sequence does not encode asparagine at the amino acid position corresponding to position 455 of the amino acid sequence set forth in SEQ ID NO: 5;
 - h) a sequence wherein the nucleotide sequence encodes histidine at the amino acid position corresponding to position 455 of the amino acid sequence set forth in SEQ ID NO: 5;
 - i) a sequence wherein the nucleotide sequence does not encode valine at the amino acid position corresponding to position 894 of the amino acid sequence set forth in SEQ ID NO: 5;
 - j) a sequence wherein the nucleotide sequence encodes isoleucine at the amino acid position corresponding to position 894 of the amino acid sequence set forth in SEQ ID NO: 5;
 - k) a sequence wherein the nucleotide sequence does not encode alanine at the amino acid position corresponding to position 2951 of the amino acid sequence set forth in SEQ ID NO: 5; and
 - l) a sequence wherein the nucleotide sequence encodes threonine at the amino acid position corresponding to position 2951 of the amino acid sequence set forth in SEQ ID NO: 5.